APPENDIX C — OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED AND DECIDED MAY 31, 2001

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

00-1316, -1320, -1406

ACCUSCAN, INC.,

Plaintiff-Cross Appellant,

v.

XEROX CORPORATION,

Defendant-Appellant.

DECIDED: May 31, 2001

Before CLEVENGER, *Circuit Judge*, PLAGER, *Senior Circuit Judge*, SCHALL, *Circuit Judge*.

CLEVENGER, *Circuit Judge*.

Xerox Corporation ("Xerox") appeals the post-verdict judgment of the United States District Court for the Southern District of New York upholding a jury verdict of patent infringement in favor of AccuScan, Inc. ("AccuScan"). The patent at issue in this appeal is U.S. Patent No. 3,952,144 ("the '144 patent"). Xerox also appeals the denial of its motion for judgment as a matter of law ("JMOL") of patent invalidity based upon anticipation and the on-sale bar

pursuant to 35 U.S.C. § 102(b). Xerox additionally appeals the denial of its JMOL motion contesting the jury finding that AccuScan provided sufficient notice of infringement with regard to certain Xerox products, as well as the denial of Xerox's motion for a new trial pursuant to Fed. R. Civ. P. 60(b)(3).

On cross-appeal, AccuScan challenges the district court's denial of AccuScan's motion for JMOL requesting reversal of the jury's finding that Xerox did not willfully infringe. AccuScan also contests the district court's grant of a new trial on the issue of damages.

We conclude that issues of claim construction and prosecution history estoppel preclude a finding of infringement in this case. We therefore *reverse* the district court's denial of JMOL of noninfringement. Because the issue of patent invalidity was raised as a counterclaim in this case, we must also address the validity rulings regarding anticipation and the on-sale bar. *Cardinal Chem. Co. v. Morton Int'l, Inc.*, 508 U.S. 83, 93-94 (1993); *Gen. Elec. Co. v. Nintendo Co., Ltd.*, 179 F.3d 1350, 1356, 50 USPQ2d 1910, 1914-15 (Fed. Cir. 1999). We *affirm* the district court's denial of JMOL of invalidity.

Our holdings moot the appeals regarding notice and the denial of a new trial, and also moot the cross-appeals regarding willfulness and the grant of a new trial regarding damages.

I

The '144 patent, entitled "Methods and Apparatus for Automatic Background and Contrast Control," is directed

towards a circuit for performing contrast calibration for a scanned document. A document is typically scanned by repeatedly sweeping a light beam across it, while a photosensor senses the light reflected off the document and generates an electrical signal representing the amount of reflected light. Variations in this input signal indicate the black and white contrast within the document. However, undesirable variations in this signal may also be caused by factors such as the age of the equipment and temperature changes.

The '144 patent discloses a calibration circuit, referred to as an "ABC" circuit, that automatically corrects the input signal. The ABC circuit first scans a calibration strip on the relevant document, which contains known black and white samples, and stores the values of these samples as reference values for the entire document. The first reference value, taken from a black sample, is designated V_b, and the second reference value, taken from a white sample, is designated V_w. During subsequent scanning and transmission of the document, the ABC circuit receives a video input signal V_{IN} representing the shade of intensity of darkness or lightness of the document area then being scanned. The ABC circuit calibrates the video input signal V_{IN} using V_b and V_w to produce a corrected output signal V_O, according to the equation (hereinafter, the "Kolker equation"):

$$V_O = (V_{IN} - V_b) / (V_w - V_b)$$

'144 patent, col. 4, line 63 – col. 5, line 2.

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II

A jury verdict found that four of Xerox's product lines infringed the '144 patent: 1) the DocuTech publishing system, 2) the 5775 color copier, 3) the SA4 scanner, and 4) the 7017/20/21 facsimile machines. The district court denied Xerox's subsequent request for JMOL of noninfringement for all four product lines. The denial of a motion for JMOL following a jury verdict is reviewed by reapplying the district court's standard of review. *Tec Air, Inc. v. Denso Mfg. Mich., Inc.*, 192 F.3d 1353, 1357, 52 USPQ2d 1294, 1296 (Fed. Cir. 1999). A district court may overturn a jury's verdict only if, upon the record before the jury, reasonable jurors could not have reached that verdict. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir. 1984).

On appeal, Xerox argues that when the asserted claims are properly construed as informed by the prosecution history, none of Xerox's products infringe, either literally or under the doctrine of equivalents. We review issues of law without deference, including issues of claim construction. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979, 34 USPQ2d 1321, 1329 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Whether prosecution history estoppel applies to preclude a patentee from regaining, through litigation, coverage of subject matter relinquished during prosecution, is also a question of law. *Wang Labs. Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1577-78, 41 USPQ2d 1263, 1269 (Fed. Cir. 1997).

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In construing the claims, we begin first by reviewing the intrinsic evidence, which consists of the claims, the written description, and the prosecution history. *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1323, 57 USPQ2d 1889, 1893 (Fed. Cir. 2001); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582, 39 USPQ2d 1573, 1576-77 (Fed. Cir. 1996). Arguments and amendments made during the prosecution of the '144 patent limit the interpretation of the claim terms so as to exclude any interpretation that was disclaimed during prosecution. *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576, 34 USPQ2d 1673, 1676-77 (Fed. Cir. 1995); *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1580, 6 USPQ2d 1557, 1561 (Fed. Cir. 1988).

Only claims 1 and 17 of the '144 patent are at issue in this litigation. Claim 1 is an apparatus claim that uses means-plus-function language:

> 1. Apparatus for processing a variable magnitude input signal representative of an input parameter which varies between predetermined first and second magnitudes, said apparatus comprising:
>
> A. means for storing a first sample of said input signal when said input parameter is at its first magnitude;
>
> B. means for storing a second sample of said input signal when said input parameter is at its second magnitude;

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C. and means, operable during a reception period in which said input signal is representing varying magnitudes of said input parameter, for *continually combining said input signal and said first and second samples* to continually *produce an output signal representative of the difference in magnitude of said input signal and said first sample divided by the difference in magnitude of said first and second samples*, whereby said output signal is normalized so as to represent the magnitude of said input parameter as a fraction of the range established by the difference in magnitude of said first and second samples.

'144 patent, col. 18, line 58 – col. 19, line 11 (emphases added to illustrate contested portions).

Claim 17 is a method claim:

17. A method for operating upon a variable magnitude signal representing a parameter which varies in magnitude over a range between a predetermined low magnitude and a predetermined high magnitude, said variable amplitude signal being subject to undesired offsets and gain variations in its representation of said parameter, said method comprising the steps of:

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1. storing a first sample of said variable magnitude signal when said input parameter is at its low magnitude and producing a first signal representative of said stored first sample;

2. storing a second sample of said variable magnitude signal when said input parameter is at its high magnitude and producing a second signal representative of said stored second sample;

3. thereafter during a period in which said received input signals is [sic] representing the variable magnitude parameter, *continually combining said input signal and said first signal to produce a first output signal* having a magnitude representative of the difference in magnitude of said input signal and said first signal;

4. *combining said first signal and said second signal to produce a second output signal* having a magnitude representative of the difference in magnitude of said first and second storage samples;

5. and combining said first and second output signals to *produce a third output signal representative of the quotient of their magnitudes.*

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'144 patent, col. 22, lines 11-39 (emphases added to illustrate contested portions).

Xerox argues that statements made in the prosecution history to distinguish U.S. Patent No. 3,761,610 ("the Krallinger reference") limit the claims of the '144 patent in several ways. First, Xerox argues that AccuScan disclaimed the use of anything other than a "divide circuit" for the function claimed in claim 1 as: "produc[ing] an output signal representative of the difference in magnitude of said input signal and said first sample *divided by* the difference in magnitude of said first and second samples" (emphasis added). '144 patent, col. 19, lines 3-7. The portion of claim 17 corresponding to this "divide" function states: "produc[ing] a third output signal representative of the *quotient* of their magnitudes." '144 patent, col. 22, lines 29-32 (emphasis added).

The Examiner originally rejected all of the claims of the application that matured into the '144 patent pursuant to 35 U.S.C. § 103 as obvious over the Krallinger reference in view of U.S. Patent No. 2,909,597 ("the Johnson reference"). The prosecuting attorney replied to this rejection with remarks directed towards contrasting the invention of the '144 patent with the Krallinger and Johnson references. Because these remarks are not limited to any particular claim of the '144 patent, they are presumed to apply to all of the claims.

In distinguishing the '144 patent from the Krallinger reference, the prosecuting attorney stated:

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> In the further operation of the Krallinger, et al. device, during the scanning of the line the input video signal, background corrected by the black signal stored in capacitor 20, is *multiplied* [emphasis in original] by the temporarily fixed gain of the amplifier 24 throughout the remainder of the line so as to yield a background and gain compensated signal. It is clear, however, that a white sample is not stored or utilized during this operating period, and moreover, *no divide circuit is utilized* . . . (emphasis added).

The ABC circuit as disclosed in the '144 patent uses a "divide circuit 141" which "operates to divide the numerator signal by the denominator signal to continually produce a corresponding fully correct and gain controlled or normalized video output signal V_O." '144 patent, col. 13, lines 18-21. Based upon the above statements in the prosecution history, AccuScan explicitly disclaimed coverage of any device performing the mathematical calculation yielding V_O by something other than a divide circuit. This disclaimer applies equally to the "divided by" language of claim 1 and the "quotient" language of claim 17. A quotient is a number resulting from the division of one number by another, and the clause of claim 17 which contains the "quotient" language clearly refers to the mathematical function resulting in the "third output signal" corresponding to V_O.

It is uncontested that the accused DocuTech publishing system performs the mathematical calculation yielding V_O by multiplying by a reciprocal instead of using a divide circuit. Furthermore, it is uncontested that the 5775 copier

performs this calculation by subtracting logarithmic values. AccuScan argues that a signal representative of a division or a signal representative of a quotient may be obtained by multiplication of a reciprocal — as is done in Xerox's DocuTech system — or by subtracting logarithmic values — as is done in Xerox's 5775 copier. Certainly, this is mathematically correct. Under different circumstances, it would be entirely possible to determine that a divide function could encompass multiplication by a reciprocal or logarithmic subtraction, either literally or under the doctrine of equivalents. In the present case, however, AccuScan explicitly disclaimed such an interpretation during prosecution. Therefore, there can be no infringement of either claim 1 or claim 17 with respect to either the DocuTech publishing system or the 5775 copier.

However, the record with regard to the SA-4 scanner and the 7117/20/21 facsimile machines is not as clear. Both of these machines utilize digital circuits, as opposed to the analog ABC circuit of the '144 patent. The evidence and testimony presented regarding these two products is simply not sufficient for this court to determine whether or not the SA-4 scanner and the 7117/20/21 facsimile machines "divide" to obtain V_o or perform some other mathematical function. Thus, we consider a second aspect of the claim construction.

Xerox also argues that its four products cannot infringe under a correct claim construction because AccuScan specifically argued during prosecution that the claims did not cover circuits that do not store and hold a white sample during the entire scan of the document, and do not continually combine the input signal with the black and white samples during the entire scan of the

document. The prosecuting attorney characterized the invention of the '144 patent as performing the following:

> In response to the second sampling signal, the ABC unit stores in the input capacitor of a second operational amplifier a second sample of the video input signal corresponding to the white shade or value of the calibration strip being scanned. Thus, at the completion of the calibration scan separate black and white representing samples of the input video signal are held stored in the input capacitors of their respective operational amplifiers, which produce corresponding output voltage signals V_b and V_w representative of the voltage magnitudes of the black and white samples.

The prosecuting attorney distinguished the Krallinger reference from the invention of the '144 patent by describing Krallinger in the following manner:

> The immediately following white signal is not sampled or stored but instead, because of its appearance immediately following the black signal, is used in a servo operation to vary the gain of the controllable amplifier so that the amplified white signal is equal to a preset reference voltage V_r. This amplification or gain level once obtained, is held throughout the complete line by the cumulative charge stored in an error capacitor 52 which represents the cumulative level of the error signals produced in the slewing operations of the gain control servo of the amplifier. Capacitor 52 is a storage element but it

> does not store a sample of the white signal, and, moreover, a sample of the white signal is not stored at any place or position in the Krallinger, et al. circuit.

Thus, during prosecution of the '144 patent, AccuScan repeatedly emphasized the importance of storing a sample of the white signal. Furthermore, AccuScan distinguished the '144 patent over other devices which did not store a sample of the white signal. Although Krallinger does use the white sample signal to create a related value which is then stored, the prosecution history makes it clear that such a mathematically related value is not equivalent to the '144 patent's storage of a separate white sample signal.

The prosecution history of the '144 patent also makes it clear that a distinguishing feature of the '144 patent is the continual storage and continuous use of the separately stored black and white samples throughout the scanning of an entire document. Such continuous storage and usage statements were made repeatedly by the prosecuting attorney, including:

> It is clear that the ABC unit of the present invention is characterized by fully automatic acquisition of separate black and white samples of the video signal by the *continual storage* of the separate black and white samples *throughout* the subsequent scanning and transmission of a document, and by the *continuous use* during such period of the *separately stored* black and white samples to *continuously* correct the video signal received during the scanning of the document. (emphasis added).

When interpreted in light of these statements, both claim 1 and claim 17 require continuous "storing" of the V_w value in its pure form, and continuous "combining" of this value throughout the scanning of the document.

The diagrams of the operation of the Xerox devices created by AccuScan make it clear that the four different Xerox product lines at issue only temporarily store the white sample V_w in its pure form. These four illustrative diagrams all show that V_w is stored only temporarily before being converted to the difference value (V_w - V_b). There is no dispute that this is a correct characterization of the accused Xerox products. Because V_w in its pure form is stored only temporarily, it cannot be used continuously as required by the '144 patent claims as interpreted in light of the prosecution history.

For purposes of infringement under the doctrine of equivalents, the patentee is also bound by the clear and unmistakable surrender of the structure employed by Xerox. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co. Ltd.*, 234 F.3d 558, 564, 56 USPQ2d 1865, 1869 (Fed. Cir. 2000); *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 988 F.2d 1165, 1173, 26 USPQ2d 1018, 1024-25 (Fed. Cir. 1993). Thus, none of the products in the four accused Xerox product lines may be held to infringe either of the asserted claims of the '144 patent either literally or under the doctrine of equivalents.

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III

Xerox counterclaimed that the '144 patent was invalid pursuant to 35 U.S.C. § 102(b) under two different theories: anticipation and the on-sale bar. We address each of these theories in turn.

A

Xerox alleges that the '144 patent is anticipated by an IBM Technical Disclosure Bulletin by D.P. Swart entitled "Contrast Amplifier," Vol. 14, No. 3 (August 1971) 883-84 ("the IBM reference"). In order to anticipate a claim, a prior art reference must disclose every element of the claimed invention. *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999). Anticipation is a factual question, and a jury verdict regarding anticipation is reviewed after trial for substantial evidence. *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 544, 48 USPQ2d 1321, 1328 (Fed. Cir. 1998). At trial, the jury in this case ruled that the '144 patent was not anticipated by the IBM reference, and the district court held that substantial evidence supported this jury verdict. We agree.

The IBM reference discloses a contrast amplifier circuit, which operates using the principle:

$$(V_w - V_S) / (V_w - V_b)$$

This equation differs from the "Kolker equation" as used in the '144 patent in that the black sample V_b is not used as the first sample. In order to show that the IBM reference is anticipatory, Xerox must show that the district court's claim

construction for the '144 patent requiring the first sample stored to be the black sample is erroneous. The relevant portion of claim 1 states:

> A. *means for storing a first sample* of said input signal when said input parameter is at its first magnitude;
>
> B. *means for storing a second sample* of said input signal when said input parameter is at its second magnitude;

'144 patent, col. 18, lines 62-66.

Xerox concedes that the preferred embodiment disclosed in the '144 patent specification stores black as the first sample V_b and white as the second sample V_w, but relies upon the rule that the claims are not limited to the disclosed embodiments. *See Tate Access Floors, Inc. v. Maxcess Techs., Inc.*, 222 F.3d 958, 966, 55 USPQ2d 1513, 1518 (Fed. Cir. 2000). However, this analysis ignores the means-plus-function aspect of these two phrases. Claims that invoke a means-plus-function analysis under 35 U.S.C. § 112, ¶ 6 are held to only encompass "all structure in the specification corresponding to that element and equivalent structures." *Micro Chem., Inc. v. Great Plains Chem. Co. Inc.*, 194 F.3d 1250, 1258, 52 USPQ2d 1258, 1263 (Fed. Cir. 1999).

Claim 1 recites "means for storing a first sample" (clause A) and "means for storing a second sample" (clause B). This language clearly invokes a means-plus-function analysis. Xerox argues that the means-plus-function analysis applies only

to the "means for storing" language and does not relate to the "first sample" and "second sample" language of claim 1. It is true that "[s]ection 112, ¶ 6 does not limit all terms in a means-plus-function . . . clause to what is disclosed in the written description. . . ." *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1432, 54 USPQ2d 1129, 1135 (Fed. Cir. 2000). However, in the present case, it is not possible to distinguish between the "means for storing" embodiments in the written description of the '144 patent without considering either the first or second sample language as an integral part of these phrases.

The prosecution history also limits the '144 patent to storing a black sample first and a white sample second. The prosecuting attorney described the invention of the '144 patent as operating to:

> produce a first sampling signal when the ramp voltage reaches a predetermined magnitude corresponding to the scanning of the black area of the calibration strip and produces a second sampling signal when the ramp voltage reaches a second predetermined magnitude corresponding to the scanning of the white area of the calibration strip.

The prosecution history also explicitly describes the invention of the '144 patent as operating using the Kolker equation. Thus, during prosecution AccuScan surrendered coverage of a circuit operating in a manner different from the Kolker equation. For this reason, claim 17 is also limited to the Kolker equation and is not anticipated by the IBM reference.

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Every embodiment and example disclosed in the patent, as well as the prosecution history, involves storing a black sample first and a white sample second, and the district court correctly construed the claims to cover only this scenario. Thus, the '144 claims cover only the Kolker equation disclosed in the '144 patent, which clearly differs from the equation disclosed in the IBM reference. Xerox advances no other argument (including any argument based upon equivalency of structure) aside from claim construction to refute the jury verdict. Substantial evidence supports the jury's verdict that the IBM reference does not anticipate the '144 patent.

B

Xerox also argues that the '144 patent is invalid because the invention was allegedly offered for sale by AccuScan more than one year prior to the date of application for the '144 patent. 35 U.S.C. § 102(b) (1994). Under *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 66-68 (1998), the old "substantially complete" standard for determining whether the on-sale bar has been triggered has been streamlined and modernized to a two-prong test: 1) whether the patented invention was the subject of a commercial offer for sale, and 2) whether the patented invention was "ready for patenting" prior to the critical date. Although the ultimate determination of invalidity due to application of the on-sale bar is a question of law, the facts underlying satisfaction of both of these conditions are issues of fact. *Monon Corp. v. Stoughton Trailers, Inc.*, 239 F.3d 1253, 1257, 57 USPQ2d 1699, 1702-03 (Fed. Cir. 2001).

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Due to the intervening change in the law under *Pfaff* regarding the on-sale bar, the issue of whether the invention of the '144 patent was on sale prior to the critical date was tried to the jury on two separate occasions, and in both trials the jury ruled that the '144 patent was not invalidated by the on-sale bar. The district court twice upheld the jury verdict as supported by substantial evidence. However, the district court's first opinion upheld the jury verdict under the rationale that because the sale at issue was entitled a "Research and Development Contract," it did not qualify as a real sale. *AccuScan, Inc. v. Xerox Corp.*, 96 Civ. 2579 at 6-7 (S.D.N.Y. Sept. 11, 1998). *Zacharin v. United States*, 213 F.3d 1366, 1370, 55 USPQ2d 1047, 1050 (Fed. Cir. 2000), states: "[t]he fact that the sale in question was made in the context of a research and development contract and that there was no fixed price set for the [products] does not suffice to avoid the on-sale bar." Therefore, the district court's ruling on this point was legally incorrect. The district court's second ruling on the on-sale bar issue again affirmed the jury verdict as supported by ample evidence, but did not explain this ruling by pointing out the evidence which was relied upon. *AccuScan, Inc., v. Xerox Corp.*, 96 Civ. 2579 at 3 (S.D.N.Y. Mar. 15, 2000). Thus, for clarity we will briefly outline the points of evidentiary contention.

The application which matured into the '144 patent was filed on October 2, 1974, with Ray Kolker being the sole named inventor. Testimony from Mr. Kolker validated a detailed schematic of the ABC circuit dated February 28, 1972, as "the electrical schematic of my invention." Thus, the evidence supports a finding that the invention of the '144 patent was "ready for patenting" prior to the critical date.

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The second part of the on-sale test is the occurrence of a commercial offer for sale, which is the critical prong of the test in the present case. AccuScan submitted a proposal to the California Crime Technological Research Foundation ("CCTRF") in January 1973, which appears to qualify as an offer for sale. However, at trial, AccuScan presented evidence suggesting that the subject matter contained in the CCTRF proposal was not the Kolker ABC circuit invention of the '144 patent, but rather was an alternative design developed by Xerox witness Robert LaFond. The subject matter of the commercial offer for sale must "be something within the scope of the claims," and therefore the use of this alternative design would indicate that the invention of the '144 patent was not part of the CCTRF offer for sale. *Scaltech Inc. v. Retec*, 178 F.3d 1378, 1383, 51 USPQ2d 1055, 1058 (Fed. Cir. 1999).

Xerox disputes that any alternative design from Mr. LaFond ever existed, and presented testimony to that effect. Overall, the testimony presented at trial is conflicting. The CCTRF proposal lists Mr. LaFond and Mr. Dobrin (VP of Phonapix, the predecessor to AccuScan) as responsible for the program, but makes no mention of Mr. Kolker. Mr. LaFond testified that the CCTRF proposal did contain the Kolker ABC circuit of the '144 patent. However, Mr. LaFond also admitted that the CCTRF proposal schematic attachment did not contain a block diagram labeled "ABC circuit." Mr. Dobrin said that Mr. LaFond did have an alternative circuit, but Mr. Dobrin did not know many details about what went into the Phonapix Fax machines that were the subject of the CCTRF proposal. Mr. Kolker testified that the CCTRF proposal "absolutely does not" describe his invention of the '144 patent.

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Credibility determinations and the weighing of evidence are jury functions. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). Although there was some conflicting evidence presented, the jury *twice* found that the weight of the evidence favored AccuScan. On appeal, we find that substantial evidence exists to support the jury's verdict. Therefore, the '144 patent has not been shown to be invalid pursuant to the on-sale bar.

V

The district court's denial of Xerox's motion for JMOL of noninfringement is reversed. The district court's denial of Xerox's motion for JMOL of invalidity pursuant to 35 U.S.C. § 102(b) is affirmed. Our ruling regarding noninfringement renders the additional issues in the case moot.

COSTS

No costs.